FLIGHT
The AIRCRAFT ENGINEER & AIRSHIPS

First Aero Weekly in the World

Founder and Editor: STANLEY SPOONER

A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport

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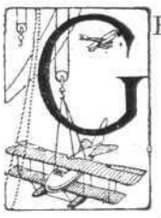
EDITORIAL COMMENT.

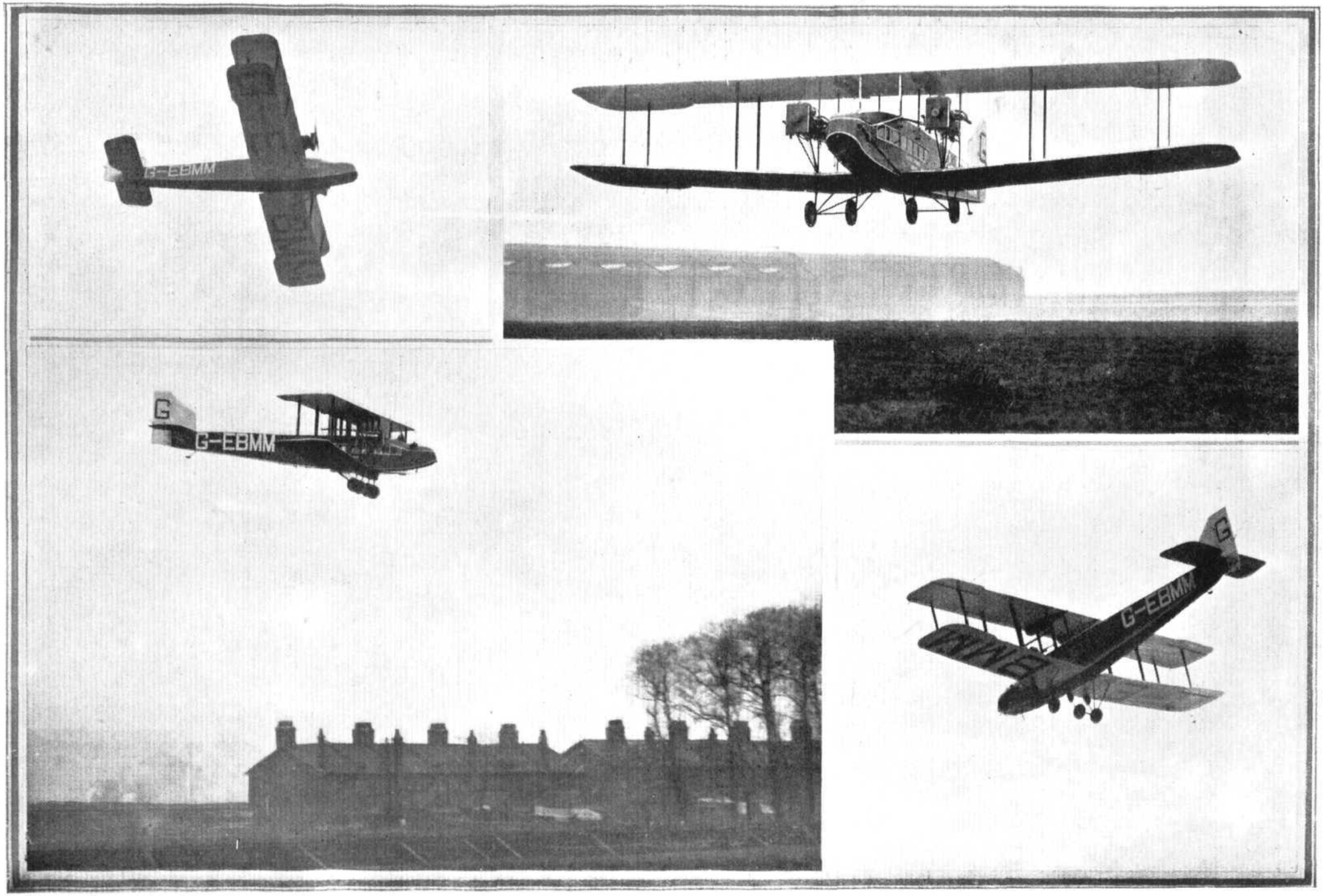


"GESTURE" is a word that has come to be used by modern politicians to cover all sorts of meanings, more often than not quite meaningless meanings, if we may be permitted the expression. A most unfortunate "gesture" was that of Sir Austen Chamberlain at the Civil Service dinner last week, when, on behalf of the Government, he announced that in fulfilment of a long-standing promise, he had been authorised to state that it had been decided to vote the Civil Service the sum of £200,000, to be devoted to the establishment of sports grounds for Civil Servants. "Provided, of course, that the House of Commons would agree." It would be difficult to imagine a more inopportune moment for such a "gesture," and, frankly, we believe that even the Civil Service itself would have been far more impressed had the Government chosen openly and frankly to state that, in spite of the promise made a year or so ago, under present conditions such an award could not be afforded.

Safety, Economy and Sports

We have heard a good deal of late about the sacrifices that we must be prepared to face, and the sweeping reductions in armaments which it is hoped to effect. The reasons given for the proposed reductions are partly the Locarno Treaty, and partly the urgent need for economy if British industry is to be put on its feet again. Concerning the former, it is early in the day yet to bank too much on the effect which the Locarno Treaty will have in other countries. Great Britain, after the war, or more specifically, after the Washington agreement, was the first to show her good faith by the most drastic reductions in her defence forces, Naval, Military and Air, and then it was discovered that certain other nations were not nearly so anxious to follow suit as had been expected. In other words, Great Britain's haste to do the right thing proved somewhat premature. Yet it would seem that the Government, like the Navy, forgets nothing and learns nothing.

As regards the section of our defence with which FLIGHT is most intimately concerned, our Air Forces, it is proposed to postpone the expansion that had



THE HANDLEY PAGE W.10 IN FLIGHT : These four views, taken at Cricklewood recently, show the new H.P. machine in various attitudes during a test flight. The pilot on this occasion was Capt. Hubert Broad.

A NEW PASSENGER MACHINE FOR IMPERIAL AIRWAYS

The Handley Page W.10 With Two Napier "Lions"

LAST week the first of a batch of new passenger-carrying aeroplanes for Imperial Airways, Ltd., was demonstrated at the Handley Page aerodrome at Cricklewood, the pilot being Capt. Broad, the well known de Havilland test pilot, who had been "lent" for the purpose. The new machine is known as the type W.10, and as our photographs on pages 87 and 88 will show, it is generally similar to the original Handley Page W.8 which won first prize at the Government competition at Martlesham some years ago. That is not to say that no improvements have been made. The W.8 has passed through a series of minor modifications since that time, and has appeared in various guises and with various engines. The W.10 is fitted with two Napier "Lions," as was the original Martlesham machine, but changes have been made in the engine mounting on the wings, in the cabin accommodation, and in the rudder and fin.

As regards the cabin or saloon, this has been somewhat changed in the W.10, so that now the luggage compartment is aft of the cabin, with a separate door enabling goods or luggage to be loaded without interfering with the door leading to the cabin, in exactly the same way as in the new three-engined Handley Page machine described and illustrated in FLIGHT recently. There is seating accommodation in the cabin for 14 passengers, the seats being of the wicker work variety, arranged along the sides and leaving a gangway clear down the centre, as shown in the accompanying photograph.

Provision is made for heating the cabin, the warm air entering at floor level and the cold air through the tubes supporting the net racks above the windows.

The Napier "Lion" engines are mounted in the gap between the wings, but slightly farther forward than in the earlier machines so as to trim the machine, and the petrol tanks are supported underneath the top plane, giving direct gravity feed to the engines, without the use of petrol pumps.

Those familiar with Handley Page machines will note that the fin and rudder have been somewhat re-designed. We gather that the directional control of some of the older types left something to be desired, and the new type of tail has been designed to effect an improvement, which it is stated definitely to do. The fin is taller and narrower than the old type, while the rudder is now a plain rectangle of fairly high aspect ratio. In place of a horn balance at the top, projecting over the top of the fin, the new rudder is mounted and balanced in the manner often employed to balance ailerons, *i.e.*, it is mounted on brackets extending aft ftom the fin post, the hinge line being roughly one-third the chord of the rudder from the leading edge, so that the front third of the area forms the balance. The new type of rudder is said to be very effective, and as will be readily realised, a powerful rudder control, important in all types of machine, is essential in a twin-engined type, owing to the turning moment which may arise through the stoppage or falling off in power of one engine.

THE HANDLEY PAGE W.10: View inside the saloon, looking forward. There is seating accommodation for 14 passengers.

Exact performance figures are not available, but it is believed that the cruising speed of the Handley Page W.10 will be in the neighbourhood of 100 m.p.h.

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London–Cape Town Survey Flight

BY the time this week's issue of FLIGHT is in the hands of our readers it is almost certain that Mr. Alan Cobham will have brought his flight from London to Cape Town to a successful conclusion. Mr. Elliott, the man who tended the Siddeley "Jaguar" of the D.H. 50, having recovered from his illness, Cobham left Johannesburg on February 15, arriving early that afternoon at Kimberley. Proceeding next day they reached Bloemfontein, where they were entertained at luncheon by the Mayor. At the time of writing we understand that he hoped to complete the last 620 miles to Cape Town on Wednesday. However, we are afraid that it is a question of "to be continued in our next".

German Air Transport

ACCORDING to *The Times* correspondent, Herr Schreiber (German Minister of Trade) stated in the Prussian Diet on February 15 that of the increase of 2,500,000 marks (£125,000) in the estimates for civil aviation as compared with last year's appropriation, 1,500,000 marks (75,000) was destined for the participation of Prussia in the new single air transport company known as Lufthansa Gesellschaft. The rest was to be devoted to the subsidising of air ports and aeronautical research. He said that during the six most important months of last year from the point of view of aviation, more than 2,500,000 miles had been flown and 48,000 passengers had been carried. In 1924 the number of aircraft which left the Tempelhofer aerodrome was 476; in 1925 it was 4,725. The ame number, 476, landed in the aerodrome in 1924; last year 4,729 machines landed there. The number of passengers carried by aircraft using the aerodrome in 1924 was 1,700; in 1925 it was 20,400. Thirty times as much mail as in 1924; 40 times as much baggage, 14 times as much newspaper freight, and 100 times as much general freight was dealt with in 1925.

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An Aeroplane Club for Essex

A NEW aeroplane club, known as the Essex Aeroplane Club, is now in course of formation. Tuition and flying practice will be given on Avro 504K machines in addition to De Havilland "Moths," and it is hoped to make a start in the course of a few weeks at an aerodrome close to London. Membership of the Club is open to both sexes, and those interested should send a stamped envelope for particulars to the Secretary, Flying Officer W. Knox, 21, Airlie Gardens, Ilford.

Well Done, Bermondsey!

FOR the first time, as far as we are aware, a London Borough has realised the possibilities of aircraft and has made use of the advantages so offered. The Bermondsey Borough Council has voted a sum of 20 guineas to its Libraries Committee for the purpose of obtaining an aerial survey of the whole of the borough. It was pointed out that such a survey, particularly if repeated at regular intervals, would be of extreme interest and value as a record of the changes and developments taking place in the Borough. The work is to be carried out at the first suitable opportunity by the Surrey Flying Services of Croydon.

INTER-SERVICES RUGBY FOOTBALL

Royal Air Force *v.* Royal Navy

Royal Navy, 1 goal and 1 try (8 points); Royal Air Force, 1 try (3 points)

THIS, the first of the Inter-Service Rugger matches, was played on Saturday, February 13, and, thanks to a perfect spring-like day succeeding the heavy rain of the day before, took place under ideal Rugger conditions and drew a crowd of about 8,000 to Twickenham. The R.F.U. ground makes a wonderfully quick recovery from rain, given a few hours' sunshine, and was at its best. The evening before the match I had had visions of a repetition of last year's quagmire game when these teams met, and almost pictured the handy men of the Navy improvising a few lines of duckboards for the use of their three-quarters, but as things turned out the ball was never anything but dry—hence there was little excuse for numerous passes on both sides which were not well and truly taken—nor was there a single player at the end of the game whose identity, as regards either colours or number, was hidden beneath an over-layer of mud, as was the case a year ago, when it was almost an impossibility to sort out the sky blue of the R.A.F. from the Navy's dark blue.

The Navy lost no time in making it clear that they intended to wipe out the somewhat fortunate victory of the Air Force by a penalty goal to nil at their last meeting, and by doing so secured their fifth win out of their seven encounters with the R.A.F., with a total of 78 points to 30, so that the balance is heavily against the Air Force. The result was in accordance with expectations, though at times the airmen not only threw off the more or less constant pressure of the Navy XV, but even gave ground for hopes—until Sub-Lieut. Lee scored his try under the posts near the end of the match—that in one of their onslaughts they would pull the game out of the fire and snatch another victory against the run of the play.

Only three Internationals were playing—W. G. E. Luddington and William-Powlett for the Navy, and C. N. Lowe for the R.A.F. Luddington (who, as events turned out, might with advantage have been included at his customary place in the English pack to stem the Irishmen at Dublin) skippered the Navy, and as usual put in a great amount of hard work without making himself specially prominent. The airmen were again captained by Sqdn.-Leader J. C. Russell, who emerged with honours from a very busy afternoon's work on the defence. With the exception that S. H. G. Trower took the place of P. S. Scott as the R.A.F. left wing three-quarter, the teams turned out as announced.

Looking back on the play, I think it must be conceded that the Air Force XV was not up to the level of last season. In the vital work behind the scrum the Navy had the pull for the best part of the game. The machinery linking the Air Force halves to the three-quarters did not functon as it should have done, and when that is the case no amount of effort by the pack or by individual players can re-adjust the balance. From the scrum—though the Air Force held their ground—the ball went out to the Navy three-quarters with almost monotonous regularity, thanks largely to superior heeling. Passing movements were set going to carry the ball down the Navy line with regulation precision, and but for the deadly tackling, which was the outstanding virtue of both teams, there would have been a heavier score on the board. In fact, there was a little too much precision, and too little guile, in the Navy's passing, for its execution "according to plan" enabled the airmen to get there in time to be in at the death, and to put on the extinguishing touch. Now and then the Air Force indulged in good passing, but inaccuracy usually crept in somewhere to mar the effort, and it was very rarely that their three-quarters got really going as a line. Nor have the Air Force yet learned that it is dangerous to give away the number of free kicks which again on Saturday were awarded to their opponents.

To go into details, the Air Force kicked off, and from the first scrum the Navy showed their superiority in getting the ball, but a breakdown in their passing gave the Air Force an opportunity, which came to nothing for the same reason. Within a few minutes the Air Force were on the defensive in their own 25, and things looked none too bright for them until a free kick for an off-side tackle on Lowe relieved the pressure, which, however, was almost immediately resumed. Lee, who was the best three-quarter on the field, broke away and got within a few yards of the line before he was brought down. The Navy made a great effort to push home their advantage, but stubborn tackling prevented a score. They were having nearly all the game, and a penalty for off-side against the airmen gave Richmond an opportunity, which he nearly brought off, to land a goal from far out. A series of dangerous scrums close to the Air Force line met with no success, but Lee again came within an ace of getting over. Garrett had a try at dropping a goal from close in, but just missed. In this defensive play all the Air Force backs were good, with Russell, Chambers and Bryson perhaps the most prominent. With a little luck the Navy might well have reached double figures in the first 20 minutes. The game had been in progress nearly half an hour when the airmen roused themselves and took a brief tenancy of the Navy's 25. A penalty kick by Lowe from midfield came close to success, and following up with some strong rushes, in one of which Hoskin, the Navy full-back, failed for once to gather the ball, the Air Force broke through, Rose, with a naval escort on top of him, bringing off a fine try close to the corner flag, which was not converted.

A lead of three points after having had so rough a journey seemed to give the airmen a new interest in life, and for a while they maintained pressure. The Navy, however, again took up the running, and Cumberbatch gained a lot of ground with a long kick which was missed by Wilson, and it was only the timely arrival of Chick which averted trouble. Play remained in Air Force territory from this until the interval, and after Garrett had missed from a mark, Knapman, who was in great form, made a determined attempt to go in on his own account, and failing to find a way through passed to Lee, who slipped in like a flash for an equalising try, again at the corner. Luddington took a difficult kick without success, immediately after which the whistle went for half-time, with the score 3 points all.

The second half was more even, though the Navy continued to have the upper hand most of the way. On several occasions they got close to taking the lead, and scrum followed scrum in the Airmen's half. Cumberbatch looked like scoring but was flung into touch when nearing the line. Lowe intercepted a pass which might otherwise have let the Navy through, but a moment later they were again well in the Air Force 25, with Lee and Cumberbatch always dangerous on the right wing. A spell of midfield play followed, without any particular incident excepting two or three incursions by the Air Force which were safely dealt with by the Navy backs, though there was always enough thrust about the Air Force attack to warrant hopes of another score. Hoskin, who throughout played a fine game at full back, was limping badly, but carried on with his job; and Orr-Ewing, one of the outstanding men in the Navy's forward line, and Knapman, also met with minor injuries necessitating short stoppages of the game. Trower was instrumental in stopping another Naval raid, but matters were not going at all well for the airmen. Knapman was well brought down by Hampton when going in for a try under the posts; Lee, always an opportunist, gathered the ball and carried on over the line to score a try which Luddington had no difficulty in converting. In the remaining ten minutes the Air Force made desperate efforts to wipe off the arrears, and several times play was carried within a few yards of the Navy line, but there was no weak spot in the defence, and the game returned to the Air Force 25, where Lee once again would have got over but for a last moment tackle. To the finish the Navy continued to have the best of the play, and had the margin of points been wider than it was it would have more accurately reflected the trend of the game as a whole.

The honours for the R.A.F. defence were shared chiefly by Russell, Bryson and Lowe, their full back, Wilson, though effecting many good clearances, not being anything like as reliable as his *vis-a-vis*, nor was he as quick as a back ought to be in getting rid of the ball, or as safe in finding touch. Lowe had few chances to distinguish himself in attack; he was none too well served with the material therefor, and on those occasions when he did show signs of breaking away he was too well marked by his opposite numbers to do much damage, such being the penalty of fame. Chambers and Russell, as halves, showed up better in defence than in feeding their three-quarters. There was not a great deal to choose between the two sets of forwards except in the important matter of heeling out already mentioned. Chick, who lived well up to his reputation as a hard worker, Christie and

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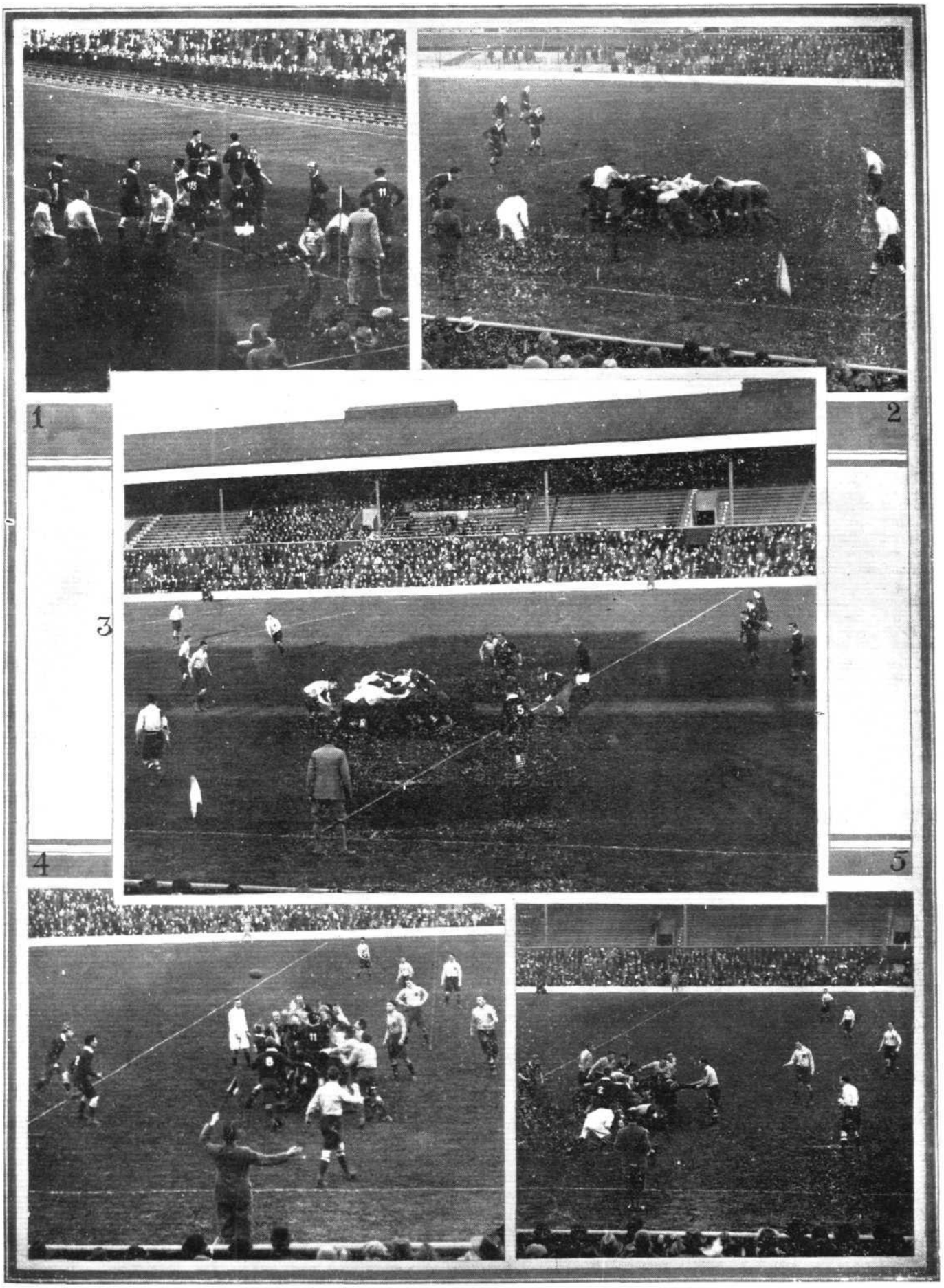
AIRCRAFT ENGINEER AIRSHIPS



SERVICE RUGGER: The R.A.F. *v.* Navy Match at Twickenham resulted in a win for the Navy. Above photographs illustrate various phases of the match: 1, The R.A.F. open the scoring. 2, a scrum in R.A.F. territory during the second half of the game. 3, a fight for the ball near the Navy's 25 line. 4, "all hands to the ball." A line-out during the second half. 5, a spirited defence by the R.A.F. A melee inside the R.A.F. 25 yards line.

O'Malley were perhaps the most conspicuous of the R.A.F. pack.

From the standpoint of Rugger as it should be played it could not be called great football, though at any rate it was a hard tussle fought to the finish in the best spirit: vigorous thrusting and hefty tackling in plenty, but clean play throughout. One came away from Twickenham, however, with a feeling that the Army XV will come out on top when they meet the Navy and the R.A.F. respectively on March 6th and 27th, unless a vast improvement in team-work takes place meanwhile in both the sides playing last Saturday.

The teams were :—

The Royal Navy.—Shipwright S. Hoskin (H.M.S. *Vivid*), back; Lieutenant H. C. Cumberbatch (H.M.S./M.H.23), Sub-Lieutenant T. S. Lee (H.M.S. *Tiger*), Sub-Lieutenant R. W. Armytage (H.M.S. *Pembroke*), and Lieutenant M. Richmond (H.M.S. *Victory*), three-quarter backs; Lieutenant C. R. Garrett (H.M.S. *Victory*) and Able-Seaman C. R. Knapman (H.M.S. *Vivid*), half-backs; Master-at-Arms W. G. E. Luddington (H.M.S. *Thunderer*), Able-Seaman W. Paddon (H.M.S. *Vivid*), Lieutenant R. D. Fricker (H.M.S. *Thunderer*), Lieutenant G. C. F. Branson (H.M.S. *Excellent*), Lieutenant P. B. R. W. William-Powlett (H.M.S. *Savage*), Lieutenant D. Orr-Ewing (H.M.S. *Vivid*) Lieutenant A. A. Havers (H.M.S. *Pembroke*), and Sub-Lieutenant H. T. Armstrong (H.M.S. *Excellent*), forwards.

The Royal Air Force.—Flying-Officer C. B. Wilson (No. 22 Squadron, Martlesham Heath), back; Pilot-Officer the Earl of Bandon (No. 4 Squadron, Farnborough), Squadron-Leader C. N. Lowe (No. 602 Squadron, Renfrew), Flight-Lieutenant O. C. Bryson (Cadet College, Cranwell), and Flying-Officer S. H. G. Trower (Northolt), three-quarter backs; Flying-Officer P. J. Chambers (Cadet College, Cranwell) and Squadron-Leader J. C. Russell (No. 3 Squadron, Upavon), half-backs; Flight-Lieutenant J. S. Chick (Experimental Section, R.A.F. Farnborough), Flight-Lieutenant E. F. Turner (No. 502 Squadron, Belfast), Flight-Lieutenant T. Rose (No. 13 Squadron, Henlow), Corporal N. W. Johnson (Record Office, Ruislip), Corporal M. G. Christie (R.A.F. Depot, Shrewsbury), Pilot-Officer J. G. Franks (No. 56 Squadron, Biggin Hill), Leading-Aircraftsman J. F. Hampton (Record Office, Ruislip), and Flying-Officer C. J. S. O'Malley (Technical Training School, Halton), Forwards.

Referee.—Mr. T. H. Vile.

G. L.

CORRESPONDENCE

The Editor does not hold himself responsible for opinions expressed by correspondents. The names and addresses of the writers, not necessarily for publication, must in all cases accompany letters intended for insertion in these columns.

METAL v. WOOD.

[2121] The articles in THE AIRCRAFT ENGINEER by Messrs. Green and Short on metal construction are valuable summaries of first-hand experience, and are particularly interesting because they bear on a subject which is treated sometimes in a more or less controversial way which generally has the effect of obscuring real issues.

If it were not for the difficulty of obtaining good spruce, the enormous rejections, and the obvious drawbacks of having to import it from a great distance, a closer comparison of wood and metal as structural materials would be very interesting. The situation, however, is dominated by the necessity of not being dependent on the supply of long lengths of good spruce. In other words, metal spars and struts are becoming necessary, and it seems that this is the point upon which to concentrate. When satisfactory spars are obtainable in metal—and by "satisfactory" is meant many things, such as ease of production and moderate cost for small numbers, etc.—the spruce difficulty will be over as far as wings are concerned, and for ribs, leading and trailing edges, etc., wood is entirely suitable and obtainable in any national emergency in the necessary quantities. It may be said, therefore, that apart from the main members, the use of metal can be determined by ordinary considerations, such as cost, maintenance, etc. In the case of fuselages, it is not easy to see what advantages can be claimed for metal construction, if an adequate supply of 3-ply wood is obtainable. It is certainly very doubtful if the combined lightness and stiffness of the 3-ply and wood fuselage can be obtained in metal. The question of length of life in hot climates remains to be answered, for the present position is that there is practically no experience of metal under these conditions, whereas the wood and 3-ply fuselage, suitably protected, has already proved itself to be thoroughly satisfactory in hot climates. It may, in future, be necessary to depart from this form of construction for supply reasons, but apart from this necessity it seems a highly desirable type to retain.

Major Green makes an interesting comparison of wood, Duralumin and steel as materials. This comparison is a difficult one to make owing to the uncertainty of the ultimate strength of the steel. If a rectangular beam of spruce with a compressive strength of 5,000 lb. per sq. in., is tested it will develop a fibre stress of about 8,000 lb. per sq. in. before failure. An ordinary spar section may not quite attain this figure, but will in general exceed 7,000 lb. per sq. in. Similarly the figure given for Duralumin is the approximate yield stress of this material, the ultimate being largely in excess of this. Thus wood and Duralumin have a large reserve of strength against actual failure of the structure, since their load factors are calculated on the low figure. If an aircraft were seriously overstressed, compression "shakes" would appear in wood, and in both wood and Duralumin deformation would occur without failure of the structure. It would be interesting to know to what extent this reserve against failure exists in the steel-strip spar, when its factors are calculated on the "Proof Stress." Presumably it would be considerably smaller.

Our firm has recently been testing metal spars, for a certain machine, and in making check tests on the actual spruce spars used in the same type, it is certainly striking to notice in every case the great margin of strength against actual failure over that calculated.

Metal spars, however, have got to come, and it will be interesting to watch their evolution. Steel has the advantage of being a more home-produced material, while Duralumin, as pointed out by Mr. Short, has certain structural and manufacturing advantages—is well adapted to float construction, and is likely to be improved in its physical characteristics.

While weight of structure is naturally of great importance, it can be exaggerated. An easily produced and cheap metal spar woud be worth adopting, even if it were 10 per cent. heavier than wood. It would in fact be more valuable in most cases than a difficult and costly spar weighing 10 per cent. less than wood. The effect on the total weight of the aircraft would be small in either case.

Stag Lane Aerodrome, Edgware.
February 11, 1926.

C. C. WALKER.

METAL CONSTRUCTION.

[2122] I have read with interest Mr. Oswald Short's notes on my article in THE AIRCRAFT ENGINEER on steel construction for aeroplanes. There is little doubt that in case of emergency it would be possible to obtain supplies of bauxite from Northern Ireland, and that in time we should be able to manufacture our own supplies of aluminium. Unfortunately, the time taken in getting going would be serious, and unless we had large supplies of aluminium there would probably be a serious shortage, for a time at least. There is scarcely the same chance of shortage of steel, and in any case we should be in such a hopeless position without steel that it would not much matter whether we could make aeroplanes or not.

With regard to Mr. Short's other point, the question is whether it is safe to work to a higher stress than the proof stress. In the British Standard Specification 2L3 the proof stress is given as 13·5 tons to the square inch. I am well aware that it is possible to obtain stresses that are higher than the minimum proof stress when testing spars, but I am not at all sure whether it is wise to work to a higher stress, particularly when reversal of stress will occur. There are many samples of aluminium alloys that are a good deal above the present specification, but this is equally true of steel. I have some recent tests of strip steel which gave a proof stress of over 80 tons to the square inch, as against 55 tons, which is the figure I used for comparison with Duralumin.

I have little doubt but that the strength of aluminium alloys will gradually be improved in the same way as the present-day high-tensile steels are being developed, but at the present time I do not think that we are justified in basing our designs of Duralumin spars on a higher figure than I gave in my article. It, therefore, seems to me that we can make lighter spars using steel, and we are also freed from the possibility of having to re-organise our source of supply in case of war.

Coventry.
February 15, 1926.

F. M. GREEN.

FLIGHT

The Royal Aero Club of the United Kingdom

OFFICIAL NOTICES TO MEMBERS

ANNUAL GENERAL MEETING

THE Annual General Meeting of the Members of the Royal Aero Club of the United Kingdom will be held on Wednesday, March 31, 1926, at 6 p.m., at 3, Clifford Street, London, W.1.

Notices of motion for the Annual General Meeting must be received by the Secretary not less than 21 days before the meeting, and must be signed by at least five Members.

Committee.—In accordance with the Rules, the Committee shall consist of 18 Members. Members are elected to serve for two years, half the Committee retiring annually.

Retiring Members are eligible for re-election.

The retiring Members of the Committee are :—

Air Vice-Marshal Sir W. S. Brancker, K.C.B., A.F.C.
Ernest C. Bucknall.
Lord Edward A. Grosvenor.
Col. F. Lindsay Lloyd, C.M.G., C.B.E.
Lieut.-Col. J. T. C. Moore-Brabazon, M.C., M.P.
Lieut.-Col. M. O'Gorman, C.B.
Air Commodore C. R. Samson, C.M.G., D.S.O., R.A.F.
The Duke of Sutherland.

Owing to the death of Group-Capt. C. F. Kilner, there are only eight Members of the present Committee retiring this year.

Any two Members of the Club may nominate a Member to serve on the Committee provided the consent of the Member has been previously obtained. The name of the Member thus nominated with the name of his proposer and seconder, must be sent in writing to the Secretary, not less than 14 days before the Annual General Meeting.

TRANSATLANTIC FLIGHT

THE Royal Aero Club has received the following telegram from the Royal Aero Club of Spain, in reply to its message of congratulation :—

"We wish to express our profound appreciation of your kind message."

At the Banquet, held in Madrid, on Thursday, February 11, 1926, to celebrate the Spanish Transatlantic Flight, the Royal Aero Club was represented by Capt. H. H. Square.

Offices : THE ROYAL AERO CLUB,
3, CLIFFORD STREET, LONDON, W. 1.
H. E. PERRIN, Secretary

LIGHT 'PLANE CLUB DOINGS

London Aeroplane Club

THE total flying during the week was 12 hours 25 minutes.

At present the Club has only one machine in service. A new D.H. "Moth" machine has been ordered to replace G-EBLU, but delivery is not expected until the end of March. Negotiations to acquire a machine to carry on in the interim, have not so far been successful.

During the week the following Members had flying instruction :—W. Hay, W. E. P. Johnson, E. P. Brough, G. Quirk, R. C. Brighten, H. O. Richardson, R. Thomas, H. P. Hunt, J. H. Saffrey, C. E. Murrell, R. C. Presland, J. S. M. Michie, R. Malcolm, S. O. Bradshaw, L. Anderson, N. Jones, G. N. Howe.

The following members flew solo :—Mrs. Eliott-Lynn, G. H. Craig, Squadron Leader M. E. A. Wright, G. N. Warwick, P. G. Lucas.

Capt. F. G. M. Sparks, on leave from his course at the Central Flying School, Upavon, assisted in the flying instruction during the week-end.

The Lancashire Aero Club

FLYING took place on Wednesday and Saturday only. Mr. Scholes and Mr. Cantrill gave dual to the following :—H. Stern, 15 mins. ; M. Lacayo, 5 mins, R. Williams, 15 mins. ; D. Dyson, 20 mins. ; C. Parker, 45 mins. ; J. Leeming, 55 mins. ; C. Agar, 1 hr. 5 mins. ; H. Hardy, 40 mins. ; H. Smith, 1 hr. 35 mins. ; C. Colley, 35 mins. ; A. Macnair, 40 mins. ; J. Wilkinson, 35 mins. Solo flights by J. Wilkinson, 25 mins. ; M. Lacayo, 10 mins. Tests occupied 35 mins. Total dual, 7 hrs. 45 mins. Total solo, 35 mins. Joy Rides to three members, 45 mins. Total time flown, 9 hrs. 40 mins.

The above was all done on one machine, G-EBMQ, presented to the Club by Sir Charles Wakefield.

Mr. N. T. Stack has been appointed the Club's Instructor. He will commence at Woodford on Wednesday, February 24. Appointments may be made by 'phone, letter, or in the book kept for this purpose in the Hangar, flying time may not be booked further than seven days ahead. Mr. Stack will arrange to give instruction and permit Solo whenever weather permits, and it is hoped that Members who can will put in as much time during the week as possible so as not to overcrowd the week-ends.

The Club's second Dinner Dance will be held at the Midland Hotel, Manchester, on March 12 (Friday). Tickets are 35s. each, as before there will be a Cabaret Show during the evening. Tickets are already well sold. At the last Dance the Committee were forced to return money to many people who applied late, after all the tickets had been disposed of. Early application in this case is advisable.

The Newcastle-upon-Tyne Aero Club

FLYING report for week ending Sunday, February 14, 1926 :—

Very bad weather conditions were experienced during the week, but some flying was carried out each day.

The times were :—Dual, 13 hrs. 20 mins. Solo, 5 hrs. 22 mins. Tests, 25 mins. Passenger, 30 mins. Total, 19 hrs. 30 mins. All on "L.X.," which is on the way towards 300 hrs. now. The following Members flew under instruction with Major Packman :—

Miss C. R. Leathart, Mr. T. R. MacMillan, Mr. R. M. Stobie, Mr. G. H. Twine, Mrs. V. Marcks, Mr. L. Smith, Mr. C. Thompson, Mr. L. de Loriol, Mr. W. Todd, Mr. A. D. Bruce.

The following flew solo, or with passengers, all "A" pilots :—

Mr. W. Baxter Ellis, with Mr. P. F. Heppell as passenger, on one flight and Mr. H. Ellis on another.

Mr. R. M. Stobie, with Mrs. Kemp as passenger. Mr. R. N. Thompson, with Mr. Smith.

It is suggested that Mr. Heppell wondered what it felt like to fly as passenger ; hence the flight with Mr. Ellis. Mr. N. S. Todd was unable to attend the aerodrome during the week. It is believed that he is searching for a suitable "hangar."

It was whispered in the Clubhouse during the week-end that Major Packman was preparing to take the "Moth" to the Arctic when the exploration season begins again, though the only evidence put forward was that he was now wearing sheepskin (complete with wool) thigh boots. Some Members were of opinion, however, that these were quite necessary at Cramlington, while arctic weather is experienced there, so there may be no foundation for this rumour.

The Club was honoured with a visit by a R.A.F. Blackburn machine during the week.

The engine and gadgets for the "Gull" having arrived, further developments are expected at an early date.

Mr. R. N. Thompson has very kindly presented the Club with a complete Badminton set, marked the courts on the Tarmac, near the hangar, and obtained a challenge from his local Club to meet any six Aero Club "loopers, rollers or spinners." So nothing could be more complete. It is hoped that the challenge will be taken up immediately and with the true aviation spirit.

◈ ◈

THE ROYAL AIR FORCE MEMORIAL FUND

THE first meeting in the New Year of the Executive Committee of the Fund was held at Iddesleigh House, on February 10. In the unavoidable absence of the Chairman, Lord Hugh Cecil, the chair was taken by Air Marshal Sir John Salmond, K.C.B.

The proof copies of the annual report had been circulated to members of the Committee a few days previously, and the annual report was approved, and the various accounts, as audited by Messrs. Blackburns, Barton, Mayhew and Co., chartered accountants, were likewise approved, and the report was ordered to be published in due course. It was reported that the Vanbrugh Castle School, for the orphans of airmen, opened for the Spring term on January 6, with 39 boys in attendance. In this connection the Committee approved of an additional sum of £500 being voted for necessary alterations and furnishings for the school. A further application for assistance, in an educational sense, from the Salting Benefaction (administered by the Fund) was approved by the Committee. The next meeting of the Committee was fixed for April 21 at 3 p.m.

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This Year's Paris Aero Show

IT has been decided that the tenth International Aero Show will be held in the Grand-Palais, Paris, in November and December next.

R.A.F. Flying Accidents

THE Air Ministry regrets to announce that as a result of an accident to a Bristol Fighter at Heliopolis, Egypt, on February 6, Flying Officer Arthur Cleverton Tremellen, the pilot of the aircraft, was killed, and Flight-Lieut. Sturley Philip Simpson was seriously injured.

On February 10, as a result of an accident to a machine of No. 402 Flight, Mediterranean Command, Lieut. Henry Roger Hancox, Royal Navy, Flying Officer, Royal Air Force, was seriously injured and died on the following day in the R.N. Hospital, Malta.

On February 12, as a result of an accident to a Vickers-Vimy at Winterslow, Salisbury, Wilts, Sqdn.-Ldr. Alfred George Horsley-Carr, O.B.E., was killed, No. 157835 Sergt. William Norman Pink, the pilot of the aircraft, being slightly injured and No. 329752 A.C. 2 Clifford Bartlett Cardall, uninjured.

THE R.A.F. IN IRAQ

WE have on many occasions referred to the excellent work accomplished by the Royal Air Force in Iraq and the East; therefore we cannot refrain from quoting from an exceedingly interesting article by the special correspondent of the *Daily Telegraph* in Iraq, in which some important observations are made on this subject.

The *Daily Telegraph* Correspondent writes :—

"One cannot remain long among these mountains without being impressed by the importance of the Royal Air Force in their defence. Since October, 1922, the Air Vice-Marshal has been General officer commanding the military forces of the country, and some remarkable work has been accomplished. Aerodromes are to be found everywhere from Basra to Zakho. Out of a total of 43⅔ organised squadrons on the active list, 8 are stationed in Iraq, as against 6 in India and 4⅕ in Egypt, Palestine, and Transjordania. Only at home, where there are 25⅓ squadrons, is there a greater concentration, and out of a gross Air Vote for 1925–26 of £21,319,300, £2,744,100 goes to Iraq. The larger part of this sum would, of course, have to be spent, even if every machine were withdrawn, and there is no probability of the size of the air arm being reduced. The policy of expansion over a period of years necessitates the keeping up of at least the present strength, and these squadrons, if they were not here, would still have to be maintained.

"As a technical training centre the Air Vice-Marshal in Baghdad, Sir John Higgins, is convinced that Iraq affords uniquely valuable experience. Last year no fewer than 26,000 flying hours were recorded, and these included much long-distance flying, and were carried through with under ten casualties. One squadron actually recorded 504 hours in one month without casualties. Besides these reasons, the responsibility of having a whole country under its command for military purposes involves much useful routine work of organisation and administration such as the R.A.F. has never before been offered.

"From the point of view of the Service the experiment is thus admirable. It is equally advantageous from the point of view of the Civil Government, which is saved heavy expense. For Northern Iraq, owing to the inaccessibility of many of its villages, the absence of railways, the dubious excellence of the roads, and the unruliness of some of the tribesmen, is an extremely difficult country to keep tranquil. Much loose talk has been directed against the system of aerial bombing employed in refractory neighbourhoods, but to anyone who has experience of Kurdistan (where most of the trouble is located) this must seem at once the cheapest and the most humane way of restoring order. A few aeroplanes are able, after ample warning has been given, to impress unruly sheikhs with respect for authority without inflicting any loss of life, whereas otherwise a column would have to be sent out and expense and bloodshed incurred."

Married

SANDYS PARKER GEORGE, R.A.F., son of the late Rev. T. P. George and Mrs. George, Oxford, was married on January 29, at Bombay, to WINIFRED MARIE, daughter of Mr. and Mrs. WILES, Oxford.

Squadron-Leader J. LEACROFT, M.C., was married on February 2, at Nice, to Miss GLADYS CUDDON.

To be Married

The engagement is announced between REGINALD NEWMAN COLES, R.A.F., only son of Mr. and Mrs. Samuel Coles, of Erdington, Birmingham, and WINIFRED ETHEL, youngest daughter of Mr. and Mrs. JOHN BASTICK, of Stockland Green, Birmingham.

The engagement is announced between LEONARD GORDON DAVIES, late R.F.C., second son of Mr. and Mrs. Herbert Davies, of Pinner View, Harrow, and MARGUERITE INGEBORG, younger daughter of the late H. R. WOOLRYCH, M.A., and Mrs. WOOLRYCH, of Radcliffe Gardens, S.W.

The marriage between Air Commodore FELTON VESEY HOLT, C.M.G., D.S.O., and Miss MOLLIE DUGDALE, will take place at St. Peter's Church, Eaton-square, on Tuesday, March 9.

The engagement is announced between Flight-Lieut. T. P. YORK MOORE, R.A.F., youngest son of Dr. York Moore, 12, The Avenue, Surbiton, and ROWENA, eldest daughter of Maj. SAMPSON-WAY, Manor House, Henbury, Glos.

Item

MRS. T. O. LYONS and family wish to thank all who so kindly sent flowers and expressions of sympathy in their bereavement on the death of the late Wing-Commander T. O. Lyons, O.B.E.

Air Vice-Marshal Sir VYELL and Lady VYVYAN recently arrived in Cairo on a short visit.

Killed

SQUADRON-LEADER ALFRED HORSLEY-CARR, who was accidentally killed while flying at Porton, near Salisbury, was the eldest son of Mr. and Mrs. William Carr, of Barnsley, Yorkshire.

Spanish Transatlantic Flight

WHEN Comandante Franco arrived at Buenos Aires on February 10—it appears that he did not resume the flight right away from Montevideo, as reported last week, but rested several hours before continuing—he was accorded a most enthusiastic welcome from land, sea and air. After circling the city he landed in the river and was then received by President de Alvear. The King of Spain has conferred the Golden Key (which carries the rank of Chamberlain) on Comandante Franco, Capt. Ruiz de Alda, and Ensign Duran, as a personal mark of the royal pleasure at the success of the flight to Argentine. On behalf of the British contribution towards the success of this flight, we are glad to be able to state that Comandante Franco's return to Rio de Janeiro was *not* caused by engine trouble. We very much regret, however, having omitted last week to couple the names of Napier and Titanine with that of Marconi—for, of course, as we had previously reported, the Marconi (British) wireless installation fitted to the Dornier-Wal played a very important part during the flight.

Another Spanish Flight

IT is reported that two Spanish aviators, Sen. Loriga and Estevez, are preparing for a flight of 15,000 miles from Spain to the Philippine Islands in a Spanish-built machine fitted with two Rolls-Royce "Condor" engines.

Italian Transatlantic Flight Abandoned.

SIG. CASAGRANDE has been forced to abandon his attempt to fly from Italy to South America on a Savoia twin-engined monoplane flying-boat. It will be remembered that Sig. Casagrande damaged his machine at Casablanca, and a representative of the Savoia firm has made an examination of the machine and states that it cannot be repaired at Casablanca. It is, therefore, to be dismantled and sent back to Italy.

FLIGHT
AIRCRAFT ENGINEER AIRSHIPS

THE CAPRONI "CA 70" BIPLANE

A New Italian Ground Strafing Machine

WE give below some brief particulars, together with illustrations, of one of the recent military machines produced by the famous Italian aircraft constructing firm Societa Italiana Caproni, of Milan.

The Caproni "Ca 70" possesses several noteworthy features, visibly apparent as well as otherwise. As regards the former, as will be seen from the accompanying illustrations, the outstanding features most noticeable consist of the fuselage and the arrangement of the wings. The other features are centred around certain constructional details—and here, unfortunately, we have little information at our disposal—and the fact that this particular model is fitted with a 400 h.p. Bristol "Jupiter" engine. It will be remembered that we published in FLIGHT for September 17, 1925 a description of another Caproni machine fitted with Bristol "Jupiters"—the Caproni 80 night bomber.

In some ways the Caproni "70" is a smaller version of the "80," except that it is a single-engined machine and that its top plane is much larger than the bottom one—exactly opposite to the arrangement adopted in the "80." The "70" is intended for co-operation with the infantry at low altitudes—ground strafing—or it can also be employed as a night fighter. For either purpose, it possesses great advantages, mainly on account of the excellent field of vision its general lay-out provides.

Like in the Caproni "80," it will be observed that the "fuselage" is designed on the lines of a flying-boat hull, and is similarly disposed. The "70" is, however, strictly a land machine, and is fitted with a somewhat unusual type of landing gear. Details of the latter are lacking, but as far as we can gather each wheel (there are two) is carried by a stout "semi-axle" hinged to the side of the "hull" and raked slightly forward; then from the wheel hub a shock-absorbing device extends up to the lower plane, at the point of attachment of the front interplane strut. There is also a radius strut extending rearwards from the wheel hub up to the rear spar of the wing.

The "hull" is of good streamline shape, of comparatively narrow and not very deep rectangular cross section. The pilot's cockpit is located just forward of the wings, and immediately beneath the engine. Half-way along the "hull," and well clear of the wings, is the observer's or gunner's cockpit, which is provided with two machine guns—one mounted on a gun ring on the cockpit mouth, and the other mounted in the floor of the cockpit, firing downwards and rearwards. Two other machine guns are carried, one firing forward through the nose of the "hull" and the fourth firing downwards and forward.

This machine being intended for ground attack, it is armoured with Poldi steel—but whether this is confined to the body only we cannot say.

As previously stated the top plane is considerably larger than the lower one, as regards span, but equal in chord. Both are without dihedral angle. The top plane is supported by two pairs of N struts attached to the lower plane a short distance from the body. These struts, together with another pair extending up from the body, also serve to carry the engine. From the lower attachments of the N struts a pair of interplane struts extend outwards up to the top plane, and except for the incidence bracing on these latter struts there is no other external wire bracing.

THE CAPRONI "CA 70": A "close-up" showing the mounting of the 400 h.p. Bristol "Jupiter" engine above the boat-like body.

THE CAPRONI "CA 70": Side view of a recent production of the Italian Caproni firm. It is a land machine intended for ground strafing or night fighting, and is fitted with a Bristol "Jupiter."

Balanced ailerons are fitted to the top plane only, while the horizontal tail surface and elevators are mounted midway up the vertical fin and therefore well above the stern of the "hull."

The Bristol "Jupiter" engine is mounted in a neat streamlined nacelle attached to, and flush with, the underside of the top plane centre section. It is located in front of the plane and drives a tractor screw.

The main characteristics of the Caproni "Ca.70" are :—

Span (top)	14 m. (45 ft. 11 ins.).
Span (bottom)	8.m. (26 ft. 3 ins.).
Chord	2·50 m. (8 ft. 2 ins.).
Area of main planes	55 sq. m. (593 sq. ft.).
Weight empty	1,310 kgs. (2,888 lbs.).
Useful load	820 kgs. (1,808 lbs.).
Weight laden	2,130 kgs. (4,696 lbs.).
Wing loading	38·7 kgs./m² (7·9 lbs./sq. ft.).
Power loading	53 kgs./h.p. (11·7 lbs./h.p.).
Speed range	90-200 k.p.h. (56-124 m.p.h.).
Safety factor	10.

Vacancies for Royal Air Force Apprentice Clerks

THE Air Ministry announces : Sixty vacancies exist in the Royal Air Force for well-educated boys, between the ages of 15½ and 17, to enter as apprentice clerks. Approximately forty of the posts will be filled by means of an open competition, which will be held by the Civil Service Commissioners at various centres in April, and the remaining twenty by direct entry of boys who have obtained an approved school certificate. Successful candidates will be required to engage for a period terminating twelve years after reaching the age of 18, with the possibility of re-engaging to complete time for pension. Detailed information regarding the apprentice scheme can be obtained from the Inspector of Recruiting (Apprentice Clerks), 4, Henrietta Street, Covent Garden, London, W.C.2. Boys entered under this scheme undergo a two years' course of training in clerical duties, typewriting, shorthand, bookkeeping and practical office routine, during which time their general education is continued under qualified schoolmasters. The apprentices are paid 7*s.* per week for the first year and 10*s.* 6*d.* per week afterwards until they have both attained the age of 18 and have been posted for duty after passing their final examination, when they receive pay of at least 21*s.* per week. A number of the boys who pass out well are appointed as leading aircraftmen, with commencing pay of 31*s.* 6*d.* per week. In addition, there is later in their career the possibility of volunteering to become sergeant pilots.

Berlin-Tokyo Air Service

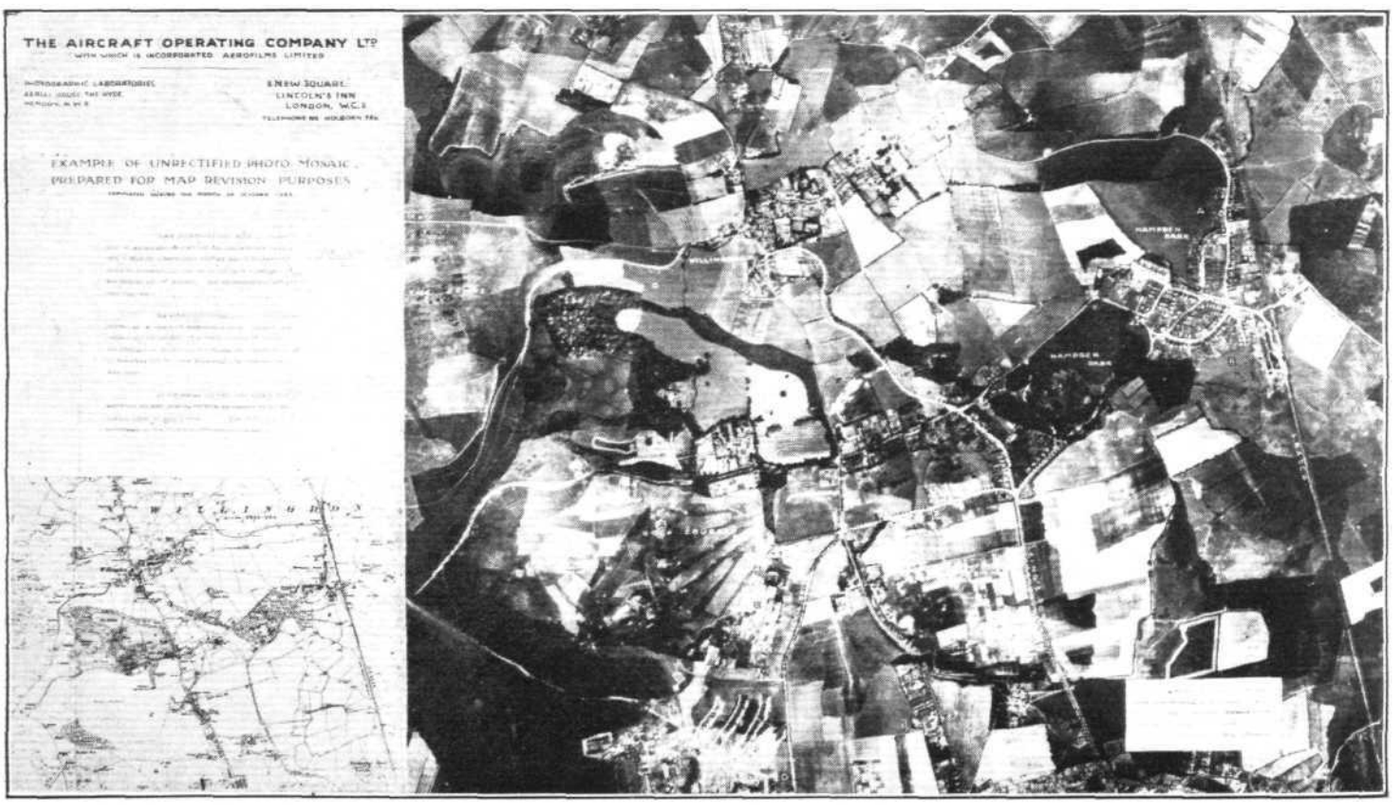
ACCORDING to reports from Moscow plans have been completed for a regular air service between Berlin and Tokyo, via Moscow. A German company will operate the section Berlin-Moscow, then passengers and goods will be conveyed by other machines, calling at Omsk, Irkutsk and Vladivostok, the complete journey occupying about 50 hours.

British Air Enterprise in Czecho-Slovakia

NEGOTIATIONS are in progress between the Aircraft Operating Co. and the Czechoslovak Government regarding the formation of a company in Prague, which will operate air lines from Prague to Belgrade and Trieste.

Dancing at Hawker's

THE Hawker staff held their annual dance at Kingston on February 9. A fully representative gathering of directors, staff and guests had a very enjoyable time, and voted the function a huge success. Among those present were Mr. and Mrs. T. O. M. Sopwith, Mr. and Mrs. F. Sigrist, Mrs. Hawker, Mr. and Mrs. F. I. Bennett, Mr. and Mrs. F. S. Spriggs, Maj. and Mrs. MacMahon, Maj. and Mrs. Buchanan, Maj. and Mrs. Bishop, Maj. and Mrs. Kilmayer, Mr. and Mrs. Burroughes, Mr. and Mrs. P. M. Muller, Mr. John Lord, Mr. and Mrs. Broadbent, Mr. and Mrs. S. Camm, Mr. St. Barbe, Flight-Lieut. and Mrs. Bulman. The arrangements were in the hands of Mr. F. S. Spriggs, which is equivalent to saying that they were perfect.



AERIAL MAP-MAKING : We show above a photograph of a mosaic of a portion of the area at Eastbourne, of which the Aircraft Operating Co., Ltd., have been taking aerial photographs under contract with the Ordnance Survey Department. Of course, a lot of the detail is lost in the reproduction and reduction. The actual size of the mosaic is 2 ft. 6 in. by 3 ft. 6 in.

FLIGHT

AMERICAN AERONAUTICS

Eleventh Annual Report of the American National Advisory Committee for Aeronautics

ALTHOUGH it contains administrative reports only, and not the technical reports, there is much in the eleventh annual report of the American National Committee for Aeronautics, just published, to interest British readers. It would obviously be impossible for us to publish the report in full, nor would such publication be of any great interest, but in the following abstracts and summaries will be found, we trust, most of the items of particular interest to British readers.

The Eleventh Annual Report covers the year 1925, and it is somewhat significant that a copy of it should reach Great Britain already during January, 1926. The Americans are "hustlers" in most things, and their Research Committee is evidently no exception to the rule.

Before dealing in detail with some of the reports given, it may be of interest to give a brief outline of the history and organisation of the American National Advisory Committee. The Committee was established by Act of Congress in 1915. Under American law the Committee holds itself at the service of any department or agency of the American Government interested in aeronautics for the furnishing of information or assistance in regard to scientific or technical matters relating to aeronautics, and in particular for the investigation and study of fundamental problems submitted by the War and Navy Departments. The Committee may also exercise its functions for any individual, firm, association or corporation within the United States, provided such individual or firm defray the cost involved.

The Committee institutes research, investigation, and study of problems which are needful and timely for the advance of the science and art of aeronautics in its various branches, and keeps itself advised of the progress made in research and experimental work in aeronautics in all parts of the world, particularly in England, France, Italy, Germany, and Canada.

The information thus gathered is brought to the attention of the various sub-committees for consideration in connection with the preparation of programmes for research and experimental work in America. This information is also made available promptly to the military and naval air services and other branches of the government, and such as is not confidential is immediately released to university laboratories and aircraft manufacturers interested in the study of specific problems, and also to the public.

The committee has 12 members, appointed by the President of the United States. Two members represent the War Department, two the Navy Department, one the Smithsonian Institute, one the U.S. Weather Bureau, and one the U.S. Bureau of Standards. The law provides that not more than five additional members acquainted with the needs of aeronautical science shall serve on the committee. Incidentally it may be mentioned that the law of the United States provides that all members as such shall serve without compensation.

Sub-Committees

The executive committee has organised six standing sub-committees, three administrative and three technical. It is with the latter that we are most concerned here. The three technical sub-committees deal with aerodynamics, power plants for aircraft, and materials for aircraft respectively. The headquarters of the American N.A.C.A. are located in the Navy Building, Seventeenth and B Streets N.W., Washington, D.C., and the administrative office is also the headquarters of the various sub-committees. The scientific investigations authorised by the N.A.C.A. are not all conducted at the Langley Memorial Aeronautical Laboratory, but the facilities of other government laboratories and shops are utilised, as well as the laboratories connected with institutions of learning, whose co-operation in the scientific study of specific problems in aeronautics has been secured.

The Langley Memorial Aeronautical Laboratory

The greater part of the research work of the committee is conducted at the Langley Memorial Aeronautical Laboratory, which is situated at Langley Field, Virginia. Langley Field is one of the most important and best equipped stations of the U.S. Army Air Service, occupying about 1,650 acres and having hangar and shop facilities for the accommodation of four bombing squadrons, a service squadron, a school squadron, and an airship squadron. In the laboratory and flying field, or air station as we should term it, fundamental problems of scientific research are investigated. The laboratory is organised with five subdivisions: power plants division, wind tunnel division, flight test division, technical service division, and property and clerical division.

On June 25, 1925, the committee authorised the construction of propeller research equipment large enough to investigate full-size propellers. The test chamber is of sufficient size to accommodate the fuselage of an aeroplane, on which the propeller is mounted and operated by the aeroplane engine. The throat of the test chamber is 20 ft. in diameter, and the actual air speed obtainable is 100 m.p.h. Last year the research flight work was carried out with the aid of 19 aeroplanes, which made a total of 626 flights, approximating 245 hours' total flying time.

Office of Aeronautical Intelligence

A department which has no exact counterpart in this country is the Office of Aeronautical Intelligence, which is situated at headquarters in Washington, D.C. This was established in 1918, its functions being the collection, classification and diffusion of technical knowledge on the subject of aeronautics. In other words, this office is the officially appointed government depository for scientific and technical reports and data on aeronautics.

To handle the work of securing and exchanging reports in foreign countries the committee maintains a technical assistant in Europe, whose headquarters are at 18, Rue Tilsitt, Paris. The present Technical Assistant in Europe is Mr. John Jay Ide, of New York. It is the duty of the technical assistant in Europe to visit personally the government and private laboratories, centres of aeronautical information and private individuals in England, France, Italy, Germany and other European countries, and to endeavour to secure for America not only printed matter which would in the ordinary course of events become available in that country, but more especially to secure advance information as to work in progress, and any technical data not prepared in printed form, and which would otherwise not reach America.

To give some idea of the work carried out by the American Office of Aeronautical Intelligence it may be mentioned that last year that office distributed no less than 35,884 technical reports.

Reports of Technical Committees

It is not possible for us, in the space available, to deal at all exhaustively with the reports of the three technical sub-committees, but the following brief references may be of interest.

In the Aerodynamics Sub-Committee's report it is stated that the committee on aerodynamics has direct control of the aeronautical research conducted at Langley Field, the propeller research conducted at Stanford University, and a number of special investigations conducted at the Bureau of Standards. The aerodynamic investigations undertaken at the Washington Navy Yard, the engineering division of the Army Air Service at McCook Field, the Bureau of Standards and the Massachusetts Institute of Technology are reported to the committee on aerodynamics.

At the *Langley Memorial Aeronautical Laboratory* the greater part of the research work was carried out, and we can but refer to a few tests that seem of special interest to readers of FLIGHT. Concerning tests on aerofoils it is interesting to find the statement that pressure distribution measurements on three thick aerofoils have been completed, and that as one of the results of this research, a new thick wing section has been designed and its air forces measured. The results of tests on this new section show a considerable gain in aerodynamic efficiency, and the report states that a very undesirable property common to most tapered wings has been eliminated. Most tapered aerofoils, it is stated, have the root section and the tip section parallel, or occasionally the tip is "washed-out." This results in an aerofoil with a changeable angle of zero lift along the span, and consequently when the total lift is zero the air force on the tips is downwards, and that at the middle section is upwards. In the new design the wing has been sufficiently "washed-in" to bring all sections simultaneously to zero lift.

Concerning tests on model aeroplanes, it is stated that one of the most interesting problems of the year was the investigation of a model of a training type of machine. This aeroplane had exhibited somewhat unusual characteristics in that it progressed from a normal spin into a flat one, from which recovery had sometimes been impossible. Tests

of the model in the wind tunnel showed that a reduction of gap, accompanied by an upward and forward shift of the centre of gravity, served to eliminate this tendency, and it is believed that under these conditions the controls would be sufficiently effective to prevent the machine entering the flat spinning condition.

Of particular interest to British readers, because no such equipment exists in this country, are the tests carried out in the American variable density wind tunnel designed by Dr. Max Munk. The report states that a series of aerofoils has been tested in this tunnel at a high Reynolds number. The 27 sections tested were derived from Dr. Munk's theory of the aerofoil, such that the travel of the centre of pressure would be small. The test results are stated to have shown remarkable agreement with the theory, and in particular demonstrated clearly that the coefficient of pitching moment about a point at 25 per cent. of the chord is practically constant, which is predicted by the theory.

In connection with the research on the U.S. Army Air Service (Sperry) Messenger aeroplane, a group of aerofoils were tested at five different tank pressures, from a low to a high Reynolds number. Besides obtaining results comparable with full-scale conditions, information was obtained as to the variation of the aerofoil characteristics with scale or Reynolds number. In general, the report states, the minimum drag coefficient decreases as the scale is increased. The maximum lift/drag ratio increases in the same manner, though to a lesser extent. The scale effect of the maximum lift coefficient differs considerably for different aerofoils, and as yet no general rule can be stated as to its true scale effect. Tests are now in progress on a series of biplane cellules using aerofoils of the R.A.F. 15 section, with several gap/chord ratios. A test of a model of the Fokker D-VII was made at a Reynolds number very close to full scale, and from a computed performance remarkable agreement with that of flight tests of the full-size aeroplane was found.

A certain amount of airship research has also been carried out during the past year. The information obtained as a result of the investigation of pressure distribution on the hull and tail surfaces of a non-rigid airship has been studied, analysed and tabulated. The data thus available cover the pressures experienced at the 400 points investigated in nearly all possible manœuvres. While the results showed that the pressures and loadings resulting from manœuvres were never in excess of those used in design computations, they indicated, however, that those experienced in bumps and gusts were probably very much larger, and might exceed the design factors in use at the present time.

Concerning aerodynamic theory the interesting statement is found that last year's progress in fundamental aerodynamic theory has been substantiated throughout the present year, and that its application to practice has been demonstrated and further light thrown on its derivation, and on its relation to other branches of technical mechanics. All experiments made to check the important theory were successful and showed very good agreement. Within the useful range of angle of attack of an aerofoil, the lift and air force moment computed agreed in a very satisfactory way with the values observed in experiments.

The theory was used to lay down a series of wing sections, all distinguished from ordinary wing sections by a characteristic of great practical value, *i.e.*, the absence of travel of the centre of pressure. Not only did the wind tunnel tests confirm this anticipated stability of the wing section, but some of the sections also proved to be good wing sections in respects other than stability, so that it is considered that the new theory has directly led to an improvement of wing section design. The report states that the variable density wind tunnel has so far substantiated expectations, and has not yet shown any indication of scale effect at tests made at full Reynolds number.

At the *Stanford University* work has been confined mostly to propeller research. This laboratory is now beginning two new researches which should be of considerable interest. These are: (1) tests on a group of metal propeller models with adjustable blades and representing 31 different propellers; (2) tests on a complete model carried out concurrently with tests of the actual machine in flight, the model being tested with three different metal propeller models.

At the *Washington Navy Yard* a considerable amount of routine work in the form of aerofoil tests has been carried out. Among the tests were a series of six aerofoils in which the effect of various forms of cut-outs in the centre of the span was investigated. The results indicate that the conventional form of cut-out is probably the most satisfactory.

A considerable amount of research on control surfaces has also been carried out at the Washington Navy Yard, and it is interesting to find that some of the experiments related to trailing edge flaps for reducing the landing speed as well as supplying lateral control.

In the course of a study of vibration of tail surfaces in certain types of aeroplanes, a series of tests were made which shed considerable light on the fundamental causes of vibration and flutter. The technical report on these tests, which will doubtless be issued soon, should be of interest to all aircraft engineers.

At the *Bureau of Standards* a variety of researches was carried out, and we have not space to refer to these in detail but it is of interest to find that measurements have been made of the pressure distribution for six aerofoils, ranging in camber ratio from 0·10 to 0·20 at speeds from 0·5 to 1·08 times the speed of sound. The measurements were made in a free air stream 2 in. in diameter, using aerofoils of 1 in. chord length. An analysis of these results is stated to be in progress.

Of the work carried out at the *Massachusetts Institute of Technology* the most interesting appears to have been the installation and test of the propeller dynamometer in the 7½-ft. wind tunnel. The dynamometer was designed for the particular purpose of testing propellers and models in the presence of each other and measuring the interference between them, and is so designed as to permit of making such interference tests at any angle of attack. The model under test is supported on wires, and the three forces and three moments acting are all read simultaneously by six identical automatic balances from which the wires depend. Readings for all forces and moments can be obtained in about 5 seconds after the model has been adjusted to the correct attitude.

McCook Field, as is well known, corresponds fairly closely to our Royal Aircraft Establishment, and carries out a great variety of researches. During the past year the routine work has included complete tests on 13 aeroplane models, with a rather elaborate investigation of the effect of fuselage, chassis, tail surfaces, etc., determined by successive removal of these parts from the model.

(To be concluded.)

ROYA AERONAUTICAL SOCIETY NOTICES.

Change of Lecture.—The attention of Members of the Society is drawn to the change of lecturer for Thursday, February 25. As Mr. A. J. Cobham will not be back from Africa in time, Flight-Lieutenant H. Cooch has consented to read his paper "On Landing Aeroplanes in Fog," on February 25, instead of March 18. It is hoped by that time Mr. Cobham will be back in England to read his paper.

The paper by Flight-Lieutenant Cooch is an important one, and describes the research work which has been carried out to solve the difficult problem of landing in fog and similar adverse conditions. Considerable headway has been made towards the solution of the problem, which is one of great importance to make flying under all conditions safe and successful in this country.

The lecture will be read at 6.30 p.m. in the Library at 7, Albemarle Street, W.1.

J. LAURENCE PRITCHARD, Hon. Secretary.

R.A.F. (Scottish) Reunion Dinner

THE Royal Air Force (Scottish) Reunion Club is holding its third annual dinner at Ferguson and Forrester's Restaurant, Buchanan Street, Glasgow, on March 5, at 7.30 p.m. This has previously been a very successful function, and this year it is hoped to raise a greater number attending than ever. The tickets are 8*s.* 6*d.* each, and can be obtained from the Hon. Sec. A remittance covering the number of tickets required should be enclosed with the application to the Hon. Secretary, 191, Sandy Road, Renfrew, N.B.

Fine South African Flight

MAJ. MENTJES and Lieut. Ross, of the S.A. Air Force, recently completed a fine non-stop flight between Pretoria-Durban-Pretoria (1,200 miles) on a D.H.9, remaining in the air for 13½ hours.

New Mooring Mast at Cardington

THE new mooring mast for airships has just been completed at Cardington. It is built of steel trellis work and is nearly 200 ft. high. The huge airship shed at Cardington is nearing completion.

FLIGHT

THE ROYAL AIR FORCE

London Gazette, February 2, 1926

Reserve of Air Force Officers

The following are granted commns. in Class A.A., General Duties Branch, as Pilot Officers on probation :—K. P. L. Bowen, V. Schofield, J. H. A. Wells ; Jan. 18. D. Abbott, N. M. Browning ; Jan. 19.

The following are confirmed in rank, Jan. 28 :—Flying Officer H. W. Smith ; Pilot Officers J. Gallacher, H. Tulloch.

Flying Officer G. C. Sclater is transfd. from Class A to Class C ; Jan. 30.

The following are transfd. from Class B to Class C :—Flying Officers : J. Durward ; Jan. 30. G. L. G. Watson, M.M. ; Feb. 2. Observer Officer : B. J. Paget ; Jan. 30.

The following Flying Officers resign their commns :—V. W. Burgess, A.F.C. Feb. 2. D. Davidson ; Jan. 10.

London Gazette, February 9, 1926

General Duties Branch

The following are granted permanent commns. in the ranks stated (Jan. 1):—*Flight-Lieut.* C. H. Cahill. *Flying Officer* A. F. James.

The following Pilot Officers are promoted to the rank of Flying Officer :—P. S. Blockey ; Jan. 15. A. C. H. Sharp ; Jan. 16. H. C. V. Jolleff, J. H. Sender, C. Clarkson ; Jan. 30. J. H. McC. Reynolds, R. Ll. R. Atcherley, J. Warburton, A. B. Kay, J. A. T. Ryde, H. H. Brookes, L. R. W. Tillard, F. W. M. Matthews ; Jan. 31.

The following Pilot Officers on probation are confirmed in rank :—P. E. Berryman, J. W. Busteed, G. P. Butcher, H. A. S. Byrne, E. H. Collinson, M.C. (Maj., E. Surrey Regt., R.A.R.O.), H. V. Crowder, F. G. H. Ewens, J. A. Hawkings, L. M. S. Knight, C. A. C. Patton, E. C. L. Richardson, W. L. Robertson, W. J. M. Spaight, I. R. Sweeting, W. S. Townend, P. G. Tweedie, R. C. Whitle ; Jan. 7. A. J. Ll. Hughes ; Jan. 13. A. P. Wayte ; Feb. 5.

The following Flight-Lieutenants are placed on half-pay, Scale B :—C. McM. Laing, M.C., A.F.C. ; Jan. 31. F. L. Luxmoore, D.F.C. ; Feb. 20. Flying Officer G. R. Burge is transferred to Reserve, Class C ; Feb. 10. The short-service commns. of the following Pilot Officers on probation are terminated on cessation of duty :—D. L. Kavanagh, A. A. Smart ; Feb. 10.

Stores Branch

Pilot Officer on probation A. Amy is confirmed in rank ; Jan. 25.

Accountant Branch

Flying Officer S. C. Gibbs relinquishes his short-service commn. on account of ill-health ; Feb. 10.

Memorandum

Flight-Lieut. M. C. H. Smith-Carington, T.D., relinquishes his hon. commn. on ceasing to be employed ; Jan. 9, 1925.

Reserve of Air Force Officers

G. N. Warwick is granted a commn. in Class A, General Duties Branch, as a Pilot Officer on probation ; Feb. 9. The following are confirmed in rank :—*Flying Officers.*—L. C. Burcher ; Dec. 17, 1925. D. H. Drew, A.F.C., D. W. Forshaw, C. S. Kent, A. R. Latham, W. Ledlie ; Feb. 4. *Pilot Officers.*—C. L. Atkinson, F. M. Brownlee, R. W. Cawston ; Feb. 4. The following Flying Officers are transferred from Class A to Class C (Feb. 9) :—F. J. E. Feeny, D.S.O., O.D. Freeman. Flying Officer F. E. C. Finzel is transferred from Class B to Class C ; Feb. 4.

ROYAL AIR FORCE INTELLIGENCE

Appointments.—The following appointments in the Royal Air Force are notified :—

General Duties Branch

Wing Commander : T. G. Hetherington, C.B.E., to Air Ministry, for duty as an "Attached Officer" ; 17.2.26.

Squadron Leaders : W. B. Farrington, D.S.O., to Air Ministry ; 1.3.26. G. H. Hall, A.F.C., to R.A.F. Depot ; 15.2.26. F. W. Trott, C.B.E., M.C. to Elec. and Wireless Sch., Flowerdown ; 2.2.26. W. B. Callaway, A.F.C., to H.M.S. *Eagle* ; 4.2.26. A. F. A. Hooper, O.B.E., to No. 5 Armoured Car Co., Iraq ; 18.12.25.

Flight Lieuts. : A. G. Bond, A.F.C., to Air Ministry ; 25.2.26. E. F. Turner, to No. 10 Group H.Q., Lee-on-Solent ; 15.2.26. G. W. Bentley, D.F.C., to R.A.F. Section, Admiralty Compass Observatory ; 8.2.26. L. G. Maxton, A.F.C., to No. 444 Flight ; 1.11.25. A. M. Wray, M.C., D.F.C., A.F.C., to Armament and Gunnery Sch., Eastchurch ; 15.2.26. H. A. Whistler, D.S.O., D.F.C., to H.Q., Iraq ; 29.1.26. T. H. Newton, D.S.C., to No. 481 Flight, Mediterranean ; 23.1.26. H. E. P. Wigglesworth, D.S.C., to No. 14 Sqdn., Palestine ; 14.1.26. E. J. McLoughlin, to No. 216 Sqdn., Egypt ; 17.1.26. C. L. King, M.C., D.F.C., to No. 70 Sqdn., Iraq, instead of to Station Commandant, Hinaidi, as previously notified ; 15.12.25. A. A. Ward, to No. 84 Sqdn., Iraq ; 17.1.26. F. G. Gibbons, D.F.C., to Heliopolis Details, Egypt ; 22.1.26. V. R. Scriven, A.F.C., to R.A.F. Base, Calshot ; 15.2.26. F. J. W. Mellersh, A.F.C., to No. 2 Flying Training Sch., Digby ; 1.3.26.

Flying Officers : R. H. W. Empson, to Armament and Gunnery Sch., Eastchurch ; 9.2.26. M. H. Garnons-Williams, to Armament and Gunnery Sch., Eastchurch ; 15.2.26. H. R. F. Baxter, to Armament and Gunnery Sch., Eastchurch ; 8.2.26. J. H. Hargroves, to No. 29 Sqdn., Duxford ; 15.3.26. R. F. Casey, D.F.C., to No. 99 Sqdn., Bircham Newton ; 15.2.26. E. C. Delamain, M.C., to R.A.F., Cadet College, Cranwell ; 16.2.26. N. H. D'Aeth, to No. 444 Flight ; 1.11.25. B. G. Pool, to No. 24 Sqdn., Kenley ; 2.2.26. S. J. Stocks, to Night Flying Flight, Biggin Hill ; 15.2.26. F. H. Bugge and A. W. Daly, to No. 2 Flying Training Sch., Digby ; 16.2.26. J. G. Western, M.B.E., to No. 31 Sqdn., India ; 15.1.26. (Hon. Flight Lieut.) C. M. E. Gifford, to No. 460 Flight, Mediterranean ; 22.1.26. F. F. Inglis, to No. 208 Sqdn., Egypt ; 18.1.26. O. K. Stirling Webb, to No. 45 Sqdn., Iraq ; 29.1.26. E. V. S. Lacey, to No. 14 Sqdn., Palestine ; 15.1.26. K. Maconochie, to No. 55 Sqdn., Iraq ; 29.1.26. C. R. Hancock, to Aircraft Depot, India ; 29.1.26. M. W. Goldie, to No. 84 Sqdn., Iraq ; 29.1.26.

Medical Branch

Squadron Leader : (Hon. W/Cdr.) E. Huntley, M.B., B.S., to R.A.F. Hospital, Cranwell ; 16.2.26.

Squadron-Leaders : A. Grant, M.B.E., M.B., D.P.H., to H.Q., India ; 15.1.26. K. Biggs, M.C., D.P.H., to R.A.F. Depot, on transfer to Home Estab. ; 29.12.25.

Flight Lieutenants : T. J. D. Atteridge to Central Flying Sch., Upavon, 2.2.26. C. V. D. Rose to Palestine General Hospital, 12.12.25. B. F. Haythornthwaite, M.B., B.A., to H.Q., Iraq., 3.1.26. C. A. Lindup to No. 5 Sqdn., India, 29.12.25.

Flight Lieuts. : V. S. Ewing, M.B., to Palestine General Hospital ; 14.1.26. P. A. Hall, M.B., B.A., to R.A.F. Hospital, Halton ; 23.2.26.

Flying Officers : W. D. McKeown M.B., to Elect. and Wireless Sch., Flowerdown ; 16.12.25. R. T. F. Grace, M.B., to R.A.F. Depot, on transfer to Home Estab. ; 14.1.26. G. M. Anderson, M.B., to No. 1 Flying Training Sch., Netheravon ; 3.1.26. J. Magner, M.B., to R.A.F. Base, Gosport, instead of to R.A.F. Depot, as previously notified ; 26.1.26.

Flying Officer : C. J. S. O'Malley, to R.A.F. Hospital, Halton ; 9.2.26.

Flying Officers : L. I. Hyder to Sch. of Tech. Training (Men), Manston, 28.1.26. E. J. Jenkins to Research Lab. and Med. Officers' Sch. of Instruction, Hampstead, on appointment to a Short Service Commission, 1.2.26.

Flying Officer (Dental), H. R. Peek to H.Q., Cranwell, on appointment to a Temp. Commission on attachment from Army, 1.2.26.

Chaplains' Branch.

Revd. J. H. P. Still, B.A., to H.Q., Palestine, 12.12.25.

NAVAL APPOINTMENTS

The following appointments have been made by the Admiralty :—

Lieuts. (Flying Officers, R.A.F.) : T. H. Villiers, attached to *Columbine* and for No. 406 Flight during Atlantic Fleet spring cruise ; Jan. 4. R. J. Berry, J. E. Vallance, and A. P. Colthurst, attached to R.A.F. Base, Gosport, during Atlantic Fleet spring cruise ; Jan. 21.

Royal Marines

Lieut. (Flying Officer, R.A.F.) : A. B. Woodhall, attached to R.A.F. Base, Gosport, during Atlantic Fleet spring cruise ; Jan. 21.

Royal Air Force

Flight Lieuts. : B. A. Malet, D.F.C., to *Eagle*, for signal duties ; Jan. 27. W. G. Preston, D.F.C., to No. 100 Sqdn ; Jan. 28. E. H. Bryant, to *Eagle*, addl., for No. 460 Flight, in command. T. H. Newton, D.S.C., to No. 481 Flight ; Jan. 23.

Flying Officer (Hon. F.-L.) : C. M. E. Gifford, to No. 460 Flight ; Jan. 22.

IN PARLIAMENT

R.A.F. Rejected Recruits

Mr. HOKE-BELISHA, on February 4, asked the Secretary of State for Air what percentage of new recruits for the Royal Air Force were discharged on account of some physical or medical disability in 1925 within 12 months of their acceptance ?

Sir S. HOARE : Less than 1 per cent. of recruits were discharged for the cause stated during 1925.

Civil Flying

CAPTAIN BENN, on February 10, asked the Secretary of State for Foreign Affairs whether any progress has been made in the negotiations as to the right of civil flying over German territory ?

Sir A. Chamberlain : The German Government have agreed to continue the present system up to March 31. What is to happen after that date is under consideration.

Captain Benn : Will negotiations as to the air clauses of the Treaty continue to be carried on by the Conference of Ambassadors, or will it pass under the competence of the League of Nations ?

Sir A. Chamberlain : I think that until they have been carried further than at present they cannot possibly pass to the League of Nations.

French and Italian Air Forces

MR. GILLETT asked the Secretary of State for Foreign Affairs what are the figures for the last three years of the number of men and machines in the French and Italian Air Forces ?

Major Sir Philip Sassoon : I have been asked to reply. So far as I am aware the French and Italian Governments have not recently published exact statistics as to the strength of their respective Air Forces, but according to my information the first line strength of the French Air Services at the present time is approximately 1,300 machines, whilst the corresponding figure for the Italian Air Force is 600 machines. There has been little change in these figures during the past three years, but the French figure represents a small increase as compared with 1924, whilst the Italian Air Force is in the early stages of a considerable programme of expansion. As regards personnel it is not practicable to give figures since a large number of those employed on air duties are found from the Navy and Army, both in France and in Italy.

Captain Wedgwood Benn : Is the expansion of the French Air Force in accordance wit the anticipations of the Government of last year when our own Air Force was expanded ?

Sir P. Sassoon : The increase since 1924 is only a small increase, and think it is entirely in accord with what we anticipated.

Light Aeroplane Sporting Clubs' Grant

MR. VIANT asked the Prime Minister whether, in view of the fact that in the interests of economy the grant of £15,000 to the cadet corps of the Territorial Army has been, or is to be, withdrawn, it is proposed to continue the grant of £15,000 to light aeroplane sporting clubs ?

The Prime Minister : As recently announced by the Secretary of State for War, the grant to the cadet corps of the Territorial Army has not been withdrawn, but will be paid during the current year. The grant to light aeroplane sporting clubs, which stands on quite a different footing, will continue to be paid.

Aircraft Carriers.

H.M.S. "EAGLE," Captain W. M. Kerr, C.B.E., has completed her refit at Portsmouth, and has received orders to leave for Gibraltar and Malta. The other aircraft-carrier of the Mediterranean Fleet, H.M.S. *Hermes*, Captain C. P. Talbot, D.S.O., has concluded her special service in China, for which she was lent at the time of the disturbances last July.

AIR POST STAMPS

By DOUGLAS B. ARMSTRONG

Polish Air Stamps

THE first air post stamps to be issued under government authority in Poland made their debut about the middle of September in nine denominations, lithographed on semi-transparent paper with a vignette of a mail 'plane in the clouds above Warsaw. Beneath the picture appears the word "LOTNICZA" (signifying "Air Post"). The set is comprised as follows:—1 groszy pale blue, 2 gr. orange, 3 gr. chestnut, 5 gr. brown, 10 gr. blue-green, 15 gr. magenta, 20 gr. sage-green, 30 gr. carmine, 45 gr. purple.

Previous issues of Polish air stamps have been only quasi-official in character and incapable of prepayment, except in conjunction with ordinary postage stamps. The two outsize vignettes, which were used for the temporary air-post service in connection with the Posen Fair of 1921 were supplied by the proprietors of a local distillery on condition that the initials of the concern T.A.B.R.O.M.I.K. were printed as an advertisement upon the margins of the stamps.

One of the designs consists of a winged man symbolizing Flight, posed against a background representing the city of Posen, with aeroplanes circling overhead. This was employed for the 25 marks vignette, while a passenger 'plane flying over open country and leaving a trail of letters in its wake figures upon the companion 100 marks. Both were the work of a local artist, W. Rudy, whose initials may be found in the corners of the stamps. Fifty-thousand copies of either value were printed by the Lithographischen Kunstantaet Pilczek, of Posen, of which only a small proportion was actually used upon letters transmitted by air to Warsaw, Lodz, Cracow, Kalisch, Lemburg and Danzig, under the auspices of the Polska Komunikacja Powietrzna between May 29 and June 8, 1921. The remainder of the unused stamps was subsequently sold to a stamp dealer, *en bloc*.

Some propaganda stamps prepared on behalf of the Polish League of Aerial Defence, bearing the device of a winged propeller, surmounted by the initials L.O.P.P. (Liga Obrony Powictrznej Panstwa) were on sale at Polish aerodromes during the week October 5 to 12, 1924, but their use upon air-post letters was entirely optional. They exist in denominations 10 gr. blue or green, and 50 gr. rose. Aerial League stamps of more elaborate design depicting an aeroplane flying over the city were issued at Warsaw early in the present year (1925), values 5 gr. orange and 10 gr. blue, but these did not represent air-post fees either.

Bolivian Air Mails

FOUR years have elapsed since the formation of La Sociedad Boliviana de Transportes Aeros holding a government concession to operate an air post line between Cochabamba and Santa Cruz. The route in question has still to be opened up to air traffic, but meanwhile tentative air-post flights were carried out in September and October last from Cochabamba to Sucre and La Paz by means of a Junker plane presented to the Republic by some wealthy German-Bolivians.

In this connection the current 50 centavos postage stamp was overprinted "Correo Aereo," followed by the names of the terminal towns and dates of the flights, at first in green and later in red. About 800 letters are believed to have been conveyed on one of these mail flights.

New Trans-European Air Lines

QUITE an interesting collection might be made of covers carried on the first flights over various branches of the trans-European air post system. New lines have recently been opened up from Vienna to Constantinople *via* Bucharest (September 25), and Vienna-Nuremburg-Leipzig-Berlin (September 7).

Latest Swiss Air Mails

AN extraordinary air post flight occurred on October 3, between Geneva and Milan, when letters both ordinary and registered were impressed with a rectangular cachet in violet, inscribed "1er Poste Aerienne Geneve-Milan, 3 Oct. 1925."

With the sanction of the Swiss Ministry of Posts letters and cards were carried by aeroplane from Dubendorf (Zurich) to St. Gallen upon the occasion of a military aviation meeting held at the former place on October 18, 1925. Souvenir cards of 10 c. and 20 c. were provided by the organising committee and cancelled with a special postmark containing the words "Militarflugkonkurrenz 18. X. 1925-Flugpost Zurich-St. Gallen," struck in violet.

IMPORTS AND EXPORTS, 1925-1926

AEROPLANES, airships, balloons and parts thereof (not shown separately before 1910). For 1910 and 1911 figures see "FLIGHT" for January 25, 1912; for 1912 and 1913. see "FLIGHT" for January 17, 1914; for 1914, see "FLIGHT" for January 15, 1915; for 1915, see "FLIGHT" for January 13, 1916; for 1916, see "FLIGHT" for January 11, 1917; for 1917, see "FLIGHT" for January 24, 1918; for 1918, see "FLIGHT" for January 16, 1919; for 1919, see "FLIGHT" for January 22, 1920; for 1920, see "FLIGHT" for January 13, 1921; for 1921, see "FLIGHT" for January 19, 1922; for 1922 see "FLIGHT" for January 18, 1923; for 1923, see "FLIGHT" for January 17, 1924; for 1924, see "FLIGHT" for January 22, 1925; for 1925, see "FLIGHT" for January 21, 1926.

	Imports.		Exports.		Re-Exports.	
	1925.	1926.	1925.	1926.	1925.	1926.
	£	£	£	£	£	£
Jan.	3,546	494	83,728	130,049	291	—

NEW COMPANIES REGISTERED

COMMERCIAL AIRSHIPS, LTD., Broadway House, 1A, Adelaide Road, Hampstead, N.W. 3.—Capital £16,000, in 12,000 prefer. shares of £1 and 80,000 ordinary shares of 1s. Objects: To carry on business as an aerial transport company for the conveyance of goods and passengers, and for advertising purposes and other services; to manufacture and deal in balloons, aeroplanes, airships, etc.; to provide and erect aerodromes, etc. Provisional directors: M. A. Klanck, H. W. Windle. Secretary: M. A. Klanck.

SPLINTERLESS GLASS CO., LTD.—Capital £25,000, in 20,000 non-cumulative prefer. shares of £1, and 20,000 ordinary shares of 5s. The prefer. shares confer the right to a fixed non-cumulative dividend of 8 per cent. and to participate to the extent of 25 per cent. of the profits remaining after payment thereof. Acquiring patent No. 221,552 for improvements relating to the manufacture of splinterless or reinforced glass, to adopt an agreement with Charles Jarrott and Joseph Cox, to manufacture and deal in splinterless reinforced, safety, protected, compound, and unbreakable glass, etc. Solicitors: Herbert Smith and Co., 62, London Wall, E.C. 2.

PUBLICATIONS RECEIVED

Jupiter Series IV Aero Engine. Air Publication 1162 (*1st Edition, May*, 1925.) H.M. Stationery Office, Kingsway, London, W.C. 2. Price 3s. 6d. net.

Bulletin de la Federation Aeronautique Internationale. 6th Year. Nos. 23-24. *September-December*, 1925. Federation Aeronautique Internationale, 35, rue Francois 1er, Paris.

AERONAUTICAL PATENT SPECIFICATIONS

Abbreviations: Cyl. = cylinder; i.c. = internal combustion: m. = motor. The numbers in brackets are those under which the Specifications will be printed and abridged, etc.

APPLIED FOR IN 1924.

Published February 18, 1926

19,609. C. E. JONES. Distant control devices, such as engine stop-motions, etc. (246,188.)
24,956. R. F. POWER. Apparatus for demonstrating variable courses of aircraft, etc. (246,207.)
26,079. C. R. FAIREY, and M. LOBELLE. Radiators. (246,231.)

APPLIED FOR IN 1925.

Published February 11, 1926

1,744. P. C. RUSHEN (BROCK AND WEYMOUTH, INC.) Cameras for aerial photography. (245,942.)
2,090. M. BLANQUIER and L. VINAY. Parachutes. (228,180.)
21,367. N. P. LITHANDER. Rotary engines. (239,507.)
27,861. SOC. RATEAU. Blades of rotary fans. (242,977.)

Published February 18, 1926

10,394. A. S. Heinrich. Radiators. (233,332.)
18,300. A. LAMBLIN. Radiators. (237,274.)
19,650. E. J. BECHARD. Contact device for preventing aircraft from bursting into flames as result of a crash. (237,930.)

FLIGHT

The Aircraft Engineer and Airships

36, GREAT QUEEN STREET, KINGSWAY, W.C.2.

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Telephone: Gerrard 1828.

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